Bedford Highway & Fourth Street Traffic Impact Statement

November 2017

Prepared for

Servant Dunbrack McKenzie & MacDonald Ltd

JRL consulting

TABLE OF CONTENTS

Prepared by

Jeff R. LeBlanc, P.Eng., PMP

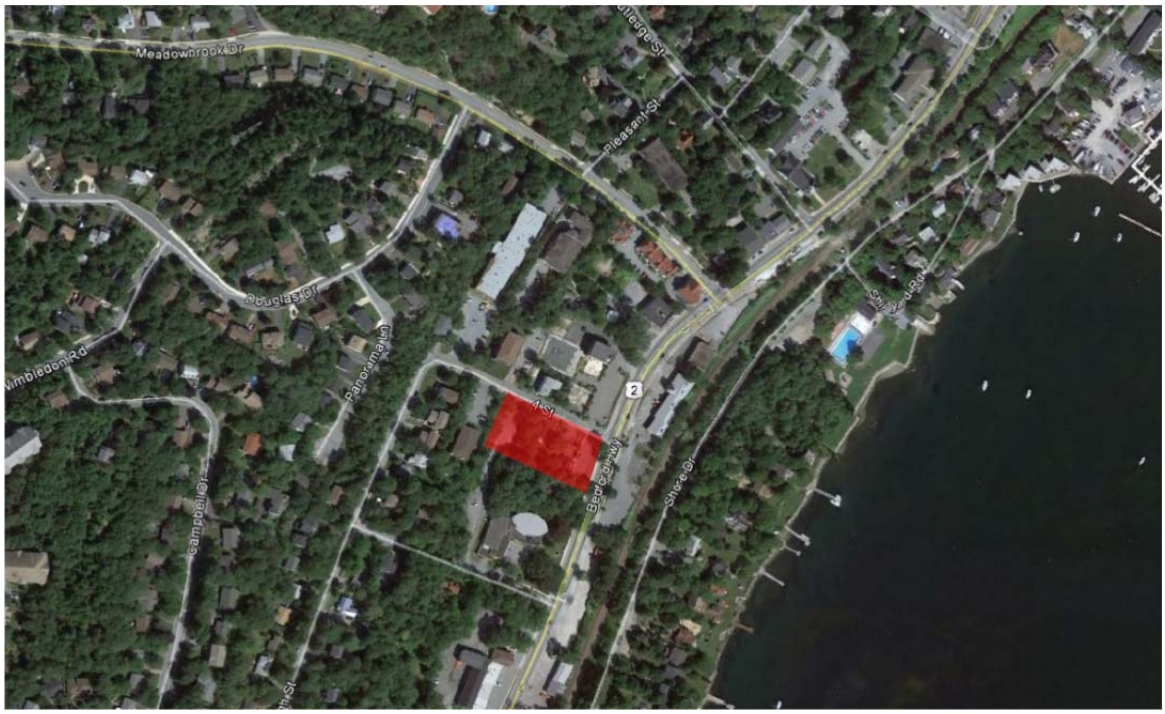
45 Thorndale Terrace, Bedford, Nova Scotia B4A 0B7
T: 902.405.5584 | email: jeff.leblanc@jrlconsulting.ca

1 Introduction

1.1 Background

Servant Dunbrack McKenzie & MacDonald Ltd., on behalf of the owner, are working on a proposal to develop a parcel of land at the southwest corner of the Bedford Highway/Fourth Street intersection in Bedford, Nova Scotia. Exhibit 1.1 shows the site in red in the context of the surrounding area.

Exhibit 1.1 – Bedford Highway & Fourth Street in Bedford, Nova Scotia

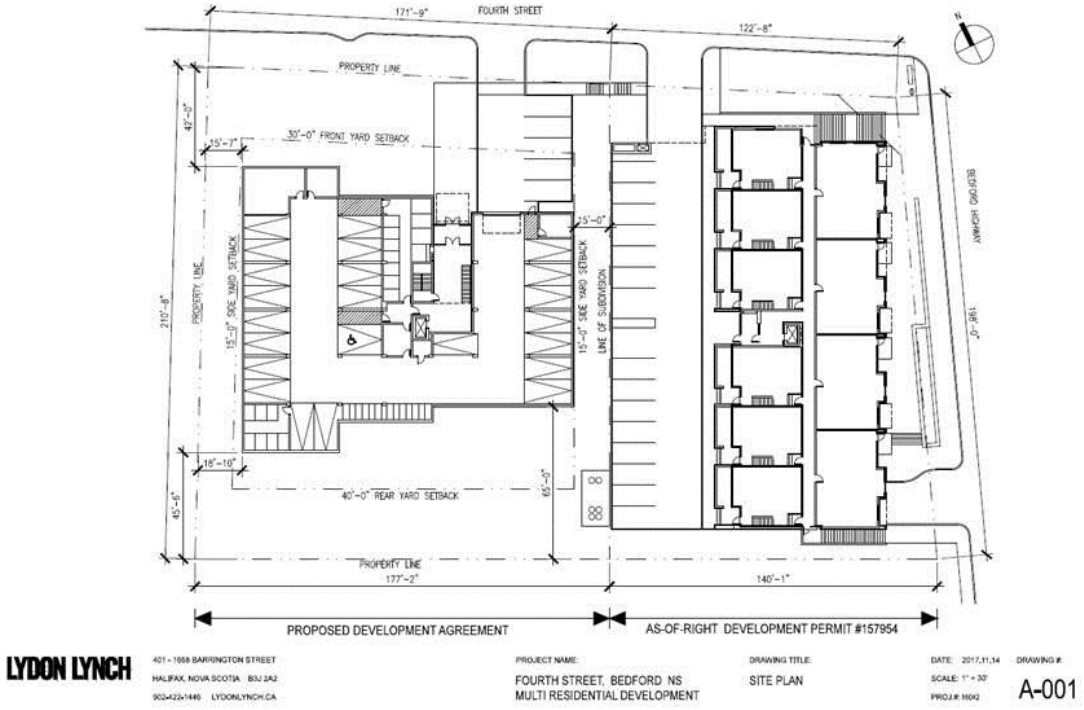


Source: Google Earth

The proposed development will be developed in two phases. Phase 1 (as of right) will be completed in accordance with the existing land use bylaw for Mainstreet Commercial (CMC) Zone and will have 6,990 sqft of Commercial/Retail Space on Ground Level along Bedford Highway with 6 townhouses and 4 apartments above including parking with access from Fourth Street and Bedford Highway. Phase 2 (proposed development agreement) will be developed behind Phase 1 with access from Fourth Street. It will contain 18 apartment units.

Refer to Exhibit 1.2 for a proposed site plan and proposed floor plans prepared by Servant Dunbrack McKenzie & MacDonald Ltd and Lydon Lynch.

Exhibit 1.2 – Bedford Highway & Fourth Street Proposed Site Plan



JRL consulting inc. was retained by SDMM to prepare a Traffic Impact Statement (TIS) to assess the potential traffic impacts of the proposed development at Bedford Highway & Fourth Street in Bedford, Nova Scotia.

The purpose of a Traffic Impact Statement is to provide a high level overview of a proposed development including estimates of site-generated traffic along with an initial review of existing traffic counts in the general area of the proposed development. This information will form part of the initial application to HRM which will be reviewed by staff and council. We are pleased to submit this report which summarizes our findings and provides the information required by HRM for review.

2 Existing Traffic Conditions

2.1 Description

The principal route affected by this development is Bedford Highway. Exhibit 2.1 summarizes HRM's Characteristics of Street Classes from HRM's Municipal Service Systems Design Guidelines.

Exhibit 2.1 - HRM Characteristics of Street Classes

Characteristic	Arterial Street	Major Collector	Minor Collector	Local Industrial	Local Street
1. Traffic Service Function	First Consideration	Traffic movement primary consideration, land access secondary consideration, some parking	Traffic movement of equal importance with land access, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted
2. Land Access Function	Limited Access with no parking				
3. Range of design traffic average daily volume	More than 20,000	12,000 to 20,000 or more	Up to 12,000	Less than 3,000	Less than 3,000
4. Characteristics of traffic flow	Uninterrupted flow except at signals; w/ pedestrian overpass	Uninterrupted flow except at signals and crosswalks	Interrupted flow	Interrupted flow	Interrupted flow
5. Average running speed in off-peak conditions	50-70 km/hr	40-60 km/hr	30-50 km/hr	15-30 km/hr	15-30 km/hr
6. Vehicle types	All types	All types but trucks may be limited	All types with truck limitation	All types	Passenger and service vehicles, transit buses; large vehicles restricted
7. Connects to	Expressways, arterials, major collectors, minor collectors	Expressways, arterials, major collectors, minor collectors, some locals	Arterials, major collectors, minor collectors, locals	Some major collectors, minor collectors, locals	Some major collectors, minor collectors, locals

Bedford Highway is major collector (Nova Scotia Highway 2) that runs along the Bedford Basin and is a major artery for traffic accessing the Halifax peninsula. The portion of the Bedford Highway in the study area provides access to commercial/residential properties and it has single northbound and southbound lanes along with a two-way left turn lane in the middle.

There are concrete sidewalks built to HRM specifications on the eastern and western sides of Bedford Highway. The posted speed limit is 50km/hr. The proposed redevelopment site is located south of the signalized Bedford Highway at Meadowbrook Drive intersection.

Refer to Exhibit 2.2 for photos of the Study Area near Bedford Highway and Fourth Street.

Exhibit 2.2 – Study Area Photos

Bedford Highway at Fourth Street

Bedford Highway at Fourth Street

Bedford Highway at Fourth Street looking north

Fourth Street looking to Bedford Highway

Bedford Highway looking south from Fourth Street

Bedford Highway looking north from Fourth Street

Bedford Highway at Meadowbrook Drive looking north

Bedford Highway at Meadowbrook Drive looking west

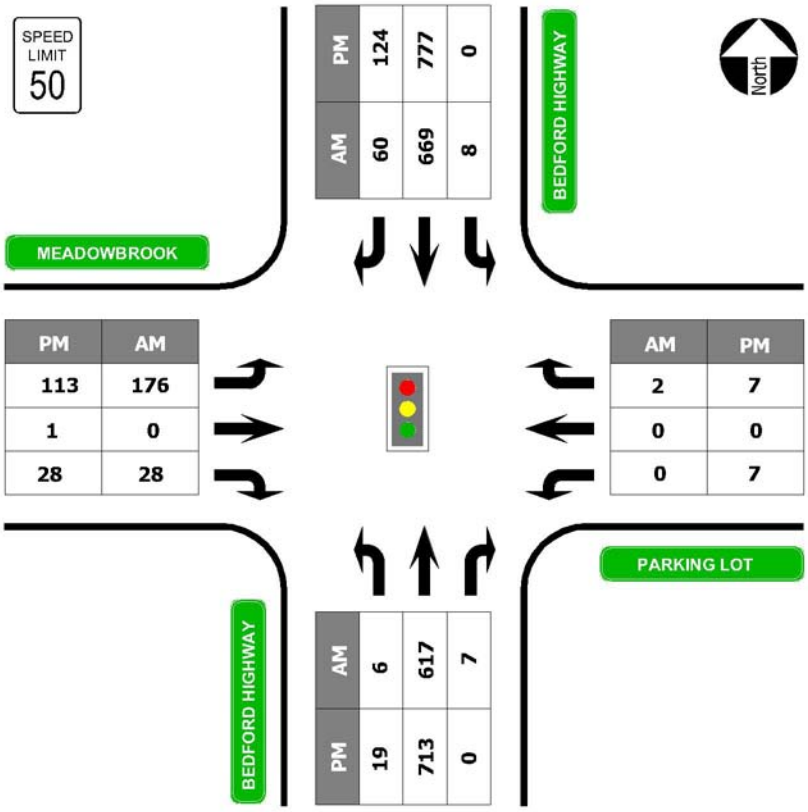
Bedford Highway approaching Meadowbrook Drive to the north

2.2 Existing Traffic Volumes

We completed a site review at the proposed development at the Bedford Highway/Fourth Street intersection and the signalized Bedford Highway/Meadowbrook Drive intersection is located approximately 150 meters to the north.

HRM completed AM and PM peak hour manual turning movement counts at this intersection in October 2016 as summarized in Exhibit 2.3.

Exhibit 2.3 – Bedford Highway at Fourth Street Existing Traffic 2016



2.3 Existing Trip Distribution

HRM counts at the Bedford Highway/Meadowbrook Drive intersection provide an accurate picture of the current trip distribution in the study area and we expect that traffic generated by the proposed development at Bedford Highway/Fourth Street will follow similar patterns.

2.4 Stopping Site Distance

As per the Transportation of Canada Geometric Design Guide for Canadian Roads, adequate stopping site distance *"is essential for safe operation that the vehicle operator be able to see far enough ahead to stop if necessary. Conditions that would force a vehicle operator to stop are for example, an object on the roadway, a culvert washout or other fault in the roadway.*

Adequate stopping site distance is required throughout the length of the roadway. Minimum stopping site distance is the sum of two distances namely:

- *Brake reaction distance*

  The distance travelled during the brake reaction time, that is the time that elapses from the instant an object, for which the driver decides to stop, comes into view to the instant the driver takes remedial action (contacts brake pedal).

- *Braking distance*

  The distance travelled from the time that braking begins to the time the vehicle comes to a stop."

For a design speed of 50 km/h, the minimum stopping site distance is 65 m.

The proposed development will have two driveways on Fourth Street which are located close to two existing driveways. There is no direct access to Bedford Highway. Fourth Street is steep but we did not observe any issues with stopping site distance during our site visit.

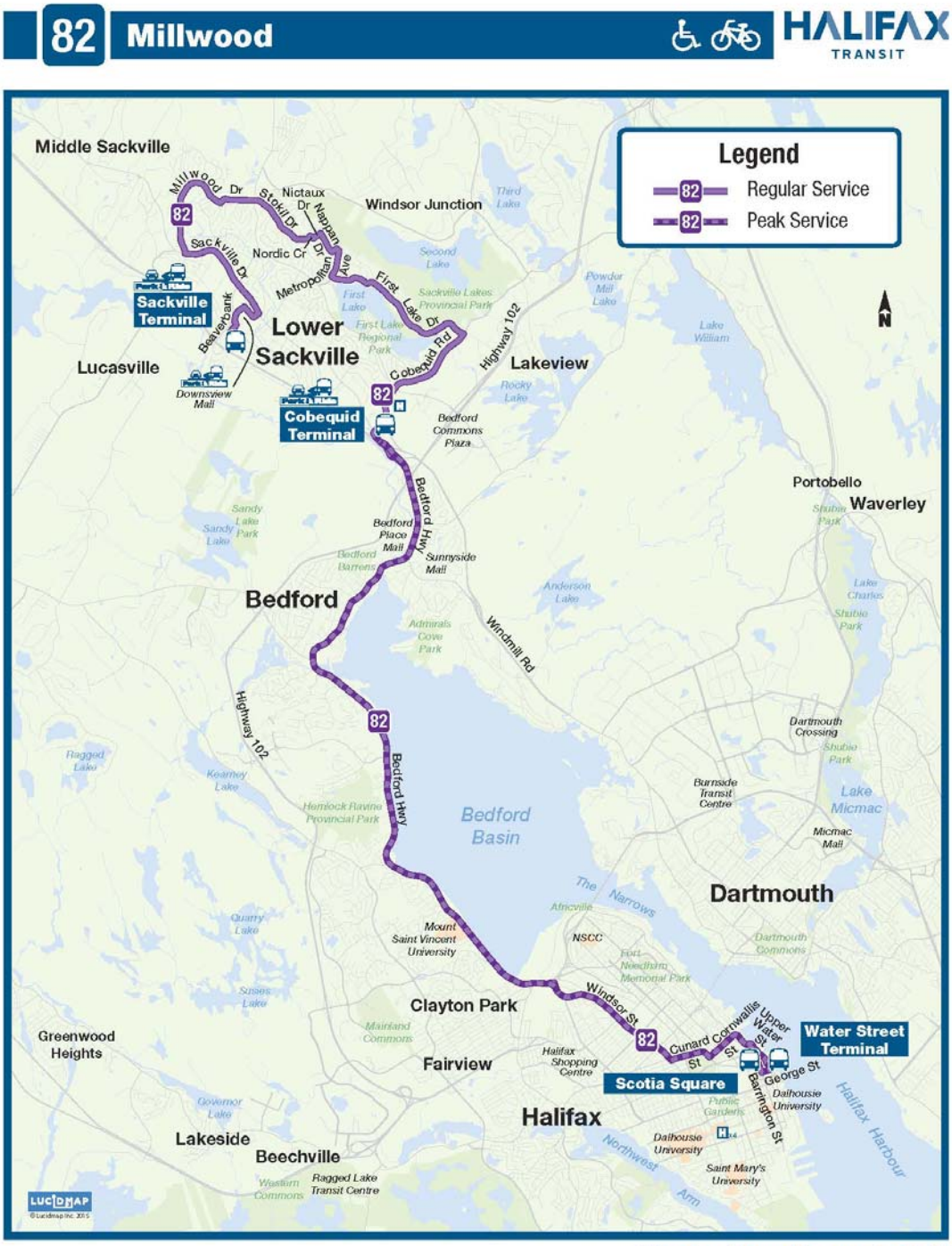
2.5 Transit and Pedestrians

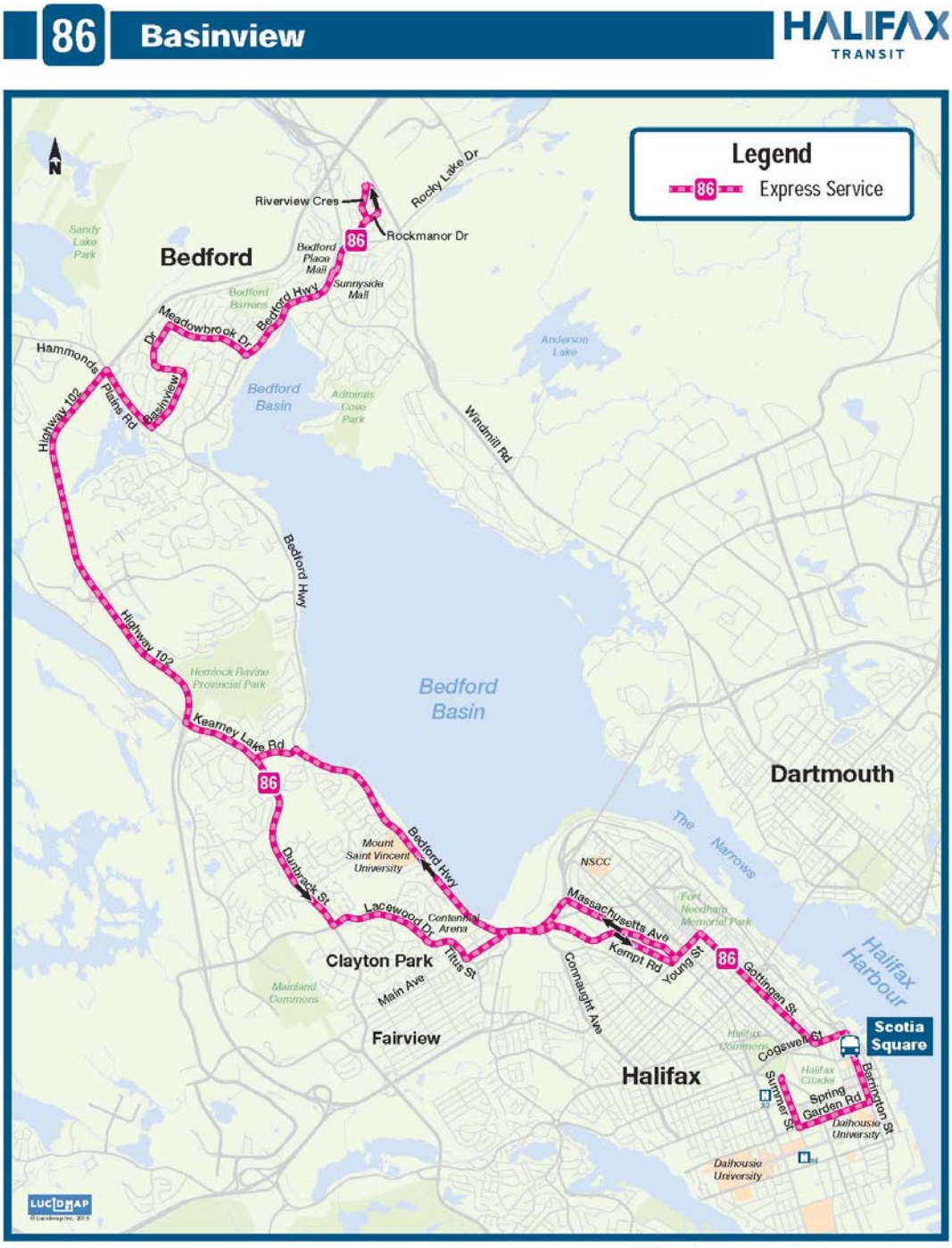
The study area is well serviced by Halifax Transit on Routes 80 Sackville, 82 Millwood, 86 Basinview and 89 Bedford (see Exhibit 2.4).

There are concrete sidewalks on both sides of Bedford Highway near at the proposed development at Bedford Highway/Fourth Street though the sidewalk on the east sides ends just south of the proposed development.

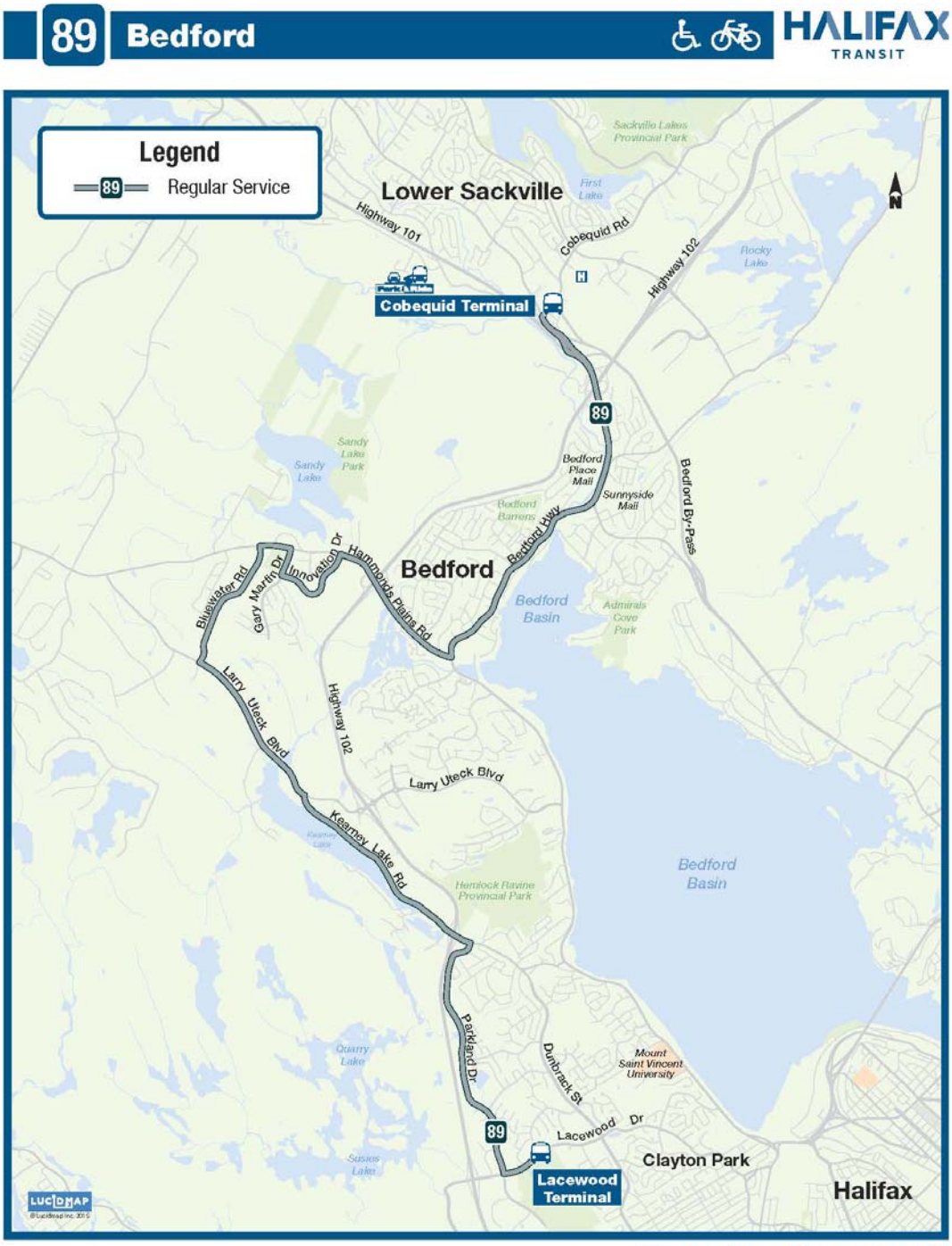
Exhibit 2.4 – Halifax Transit Route Maps

Effective Date: August 1, 2015


82 Millwood
HALIFAX TRANSIT
Legend
82 Regular Service
82 Peak Service
Middle Sackville
Millwood Dr
Nictaux Dr
Stokil Dr
Neptune Dr
Windsor Junction
Sackville Dr
Nordic Cr
Metropolitan Ave
First Lake Dr
Sackville Terminal
Beaverbank
Lower Sackville
Lucasville
Downsview Mall
Cobequid Rd
Highway 102
Lakeview
Cobequid Terminal
Bedford Commons Plaza
Portobello
Waverley
Bedford Hwy
Bedford Place Mall
Sunnyside Mall
Bedford
Windmill Rd
Dartmouth Crossing
Burnside Transit Centre
Lake Micmac
Micmac Mall
Bedford Basin
Dartmouth
The Narrows
Mount Saint Vincent University
NSCC
Clayton Park
Windsor St
Cunard
Cornwallis St
Upper Water St
Water Street Terminal
George St
Barrington St
Scotia Square
Halifax Shopping Centre
Fairview
Greenwood Heights
Halifax
Dalhousie University
Saint Mary's University
Halifax Harbour
Lakeside
Beechville
Ragged Lake Transit Centre
Effective Date: August 1, 2015



Effective Date: August 1, 2015



Effective Date: August 1, 2015

3 Site Generated Traffic

3.1 Trip Generation

Phase 1 (as of right) will be completed in accordance with the existing land use bylaw for Mainstreet Commercial (CMC) Zone and will have 6,990 sqft of Commercial/Retail Space on Ground Level along Bedford Highway with 6 townhouses and 4 apartments above including parking with access from Fourth Street and Bedford Highway. Phase 2 (proposed development agreement) will be developed behind Phase 1 with access via Fourth Street. It will contain 18 apartment units. There will be a total of 6 townhouses, 22 apartments and 6,990 sqft of commercial/retail space for the entire development

We completed trip generation estimates using equations provided in Institute for Transportation Engineer's Trip Generation Manual Ninth Edition. We used the following ITE Land Use Codes to assess site generated trips:

- ITE Land Use 210 Single Family Detached Housing

"Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision." The unit of measurement for average vehicle trip ends is dwelling units.

- ITE Land Use 220 Apartment

"Apartments are rental dwelling units that are located within the same building with at least three other dwelling units, for examples quadraplexes and all types of apartment buildings." The unit of measurement for average vehicle trip ends is dwelling units.

- ITE Land Use 820 Shopping Centre

"A shopping center is an integrated group of commercial establishments that is planned, developed, owned and managed as a unit. A shopping center's composition is related to its market area in terms of size, location and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands." The unit of measurement for average vehicle trip ends is 1,000 Square Feet Gross Floor Area.

Exhibit 3.1 – Bedford Highway at Fourth Street Estimated Site Generated Traffic Volumes

LAND USE	QUANTITY	AM PEAK			PM PEAK		
		TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT
Single Family Detached Housing ITE Land Use 210	6	14	25%	75%	8	63%	37%
			3	10		5	3
Apartments ITE Land Use 220	22	15	20%	80%	30	65%	35%
			3	12		19	10
Shopping Centre ITE Land Use 820	6,990	32	61%	39%	108	48%	52%
			19	12		52	56
TOTAL		60	26	34	146	77	70

3.2 Pass By Trips

We expect that this proposed development will attract a significant portion of its trips from the existing traffic passing by the site. These pass-by trips do not add new traffic to the surrounding transportation network; however, they are included in the traffic volumes entering and exiting the site. Essentially, pass-by trips are intermediate stops of a trip that already exists on the transportation network. They are not diverted from another roadway. The proposed retail portion of the development is relatively small and as a result will primarily serve the local area and not attract regional traffic

We reviewed ITE's Trip Generation Manual, 9th Edition for their recommended practice regarding pass-by trips and it states that *"Pass-by trips are drawn from the passing traffic stream, but are always included in site driveway movements. In traffic analyses, the summation of driveway volumes must equal the total external site generation (i.e., the sum of primary, pass-by and diverted linked trips). Pass-by trips are not included in (and thus subtracted from) the through volumes passing a given site access point on an adjacent road."*

ITE provides data plots and equations that estimate the average pass-by trip percentage versus 1,000 Square Feet Gross Leasable Area of retail space that are based on field studies completed across North America. The smaller the retail space is the larger the percentage of pass-by trips.

The average pass-by trip percentage for a 6,990 sqft shopping center is 84% during the PM peak hour. To determine a more reasonable estimate of net new traffic we reduced PM peak hour traffic for the proposed retail component by the pass-by percentage described above.

Exhibit 3.2 – Estimated Net Future Traffic Volumes with Pass-By Trip Adjustments

LAND USE	QUANTITY	AM PEAK			PM PEAK		
		TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT
TOTAL		60	26	34	55	33	22

4 Conclusions and Recommendations

- This Traffic Impact Statement has provided a high level overview of the proposed development at Bedford Highway/Fourth Street that will include 22 apartments, 6 townhouses and 6,990 sqft of commercial space on the ground floor.

- It includes an estimate of existing site generated trips; total new site generated trips and an analysis of existing traffic volumes in the surrounding area.

- We estimate that the proposed development will add a total of **60** new trips on the AM peak hour period and **55** new trips in the PM peak hour period after an adjustment for Pass-By Trips for the retail component.

- The close proximity to numerous key transit routes may reduce the estimate traffic generated by the rental apartments as provided in the report bases on ITE rates.

- New site generated traffic will most likely follow existing trip distribution patterns in the area on Bedford Highway during the AM and PM peak hour periods.